

7
4.

THE
PSYCHOLOGICAL RECORD



Paul Swartz, Editor
University of Wichita

Associate Editors

J. R. Kantor, Indiana University

Paul T. Mountjoy
Denison University

N. H. Pronko
University of Wichita

CONTENTS

Complex Behavioral Units of the Reactional Biography:

John Bucklew 44

A Book Review: Psychology by Delos D. Wickens and Donald R. Meyer:

Reviewed by Harry C. Mahan 48

Some Comments on the Analysis of Emotional Behavior:

Robert Yates Moore 51

News and Notes 57

The Psychological Record is a non-profit, quarterly publication intended to further the developing interrelationship of those psychologists interested in interbehavioral theory. With the permission of the Principia Press, Inc. the Psychological Record is a continuation of the journal formerly published under this title. As presently organized the Psychological Record publishes short articles of general psychological interest, commentaries on current psychological theory and experimentation, and descriptions of research planned or in progress. The Psychological Record will also serve as a medium for the exchange of theoretical and research notes. The subscription price per year is \$3.00. Address all communications to the editor, Paul Swartz, Department of Psychology, University of Wichita, Wichita, Kansas.

COMPLEX BEHAVIORAL UNITS OF THE REACTIONAL BIOGRAPHY

John Bucklew

Lawrence College

Students of psychology are aware of the gap that seems to exist between the concepts and methods of standard experimental psychology and those of other disciplines, such as clinical, social, or personality study. Of course, all kinds of gaps exist in science, but this particular one has stimulated among psychologists much thought and effort devoted to closing it. Historically, experimental psychology, setting forth to conquer psychology "from the bottom up," worked such basic processes as attention, perception and reaction time and, by means of the stimulus-response formula, tried to build its achievements into a rigorously scientific account of behavior. On the other hand, social, clinical, and allied fields plunged directly into the perplexities of personality hoping to marshal its variables directly into some sort of scientific rank. From this attempt we have inherited terms like habit-pattern, complex, sentiments, co-conscious mind, ego, role, and so on. Some of these constructions were frankly mentalistic in origin and as such showed little concern with the objectivity of a behavioristic stimulus-response psychology. Other terms seemed to be employed with the assumption, rarely documented, that they really referred to clusters of stimuli and responses which were too dense and complex to be individually analyzed. The total result has been far from satisfactory. A simple term, such as ego or self, cannot pass itself off as scientific system, nor can it, alone and unaided, resolve the complexities of the reactional biography. On the other hand, neither can a stimulus-response psychology devoted to abstracted, simpler processes hope through mere analogical extension of terms to encompass the data of other fields.

The gap needs closing if psychology is to have a unified set of concepts with which to order its data, but the juncture must be worked out in terms of scientific system, that is to say, postulationally. The postulate of stimulus-response psychology has traditionally been reductionistic. Complex units of behavior are results of, and explainable in terms of, simpler stimulus-response connections, these in turn explainable by laws of neurophysiology, and so on down the assumed scientific ladder. Such a view, if consistently maintained, will always perceive the terms referring to more complex clusters as statistical constructs which may have heuristic value at the particular level at which they are used, but which possess no basic explanatory value. Causation must proceed from the bottom up.

But this may not at all represent the true state of affairs. More complex units of the reactional biography, once having evolved, powerfully affect the development of behavior--as the phenomena of personality development show.

Hence the appearance of such ideas as "secondary drive," "functional autonomy," and "hierarchies of life space." A system of psychology which has laid aside the reductive postulate and succeeded thereby in freeing itself from the incubus of "physiologizing of data" would be unfaithful indeed to its original intuition if it did not consider the possibility of descriptive units other than the behavior segment. In fact we ought to question whether any unit at all should be considered basic beyond the particular purpose for which it was constructed. A reductive ladder within psychology itself may be as objectionable as one extending between the sciences.

Terms must refer to variables which are useful in interpreting and manipulating events; success in constructing them constitutes a "causal" explanation. The principle that an originally isolated behavior segment may become incorporated into a larger behavioral field seems a sound one (e.g., the incorporation of pedaling, balancing etc., into the act of walking, and walking itself into various motivational unities). This means that the originally separate acts which we considered as primary psychological events have now become participants in more inclusive behavioral events, and we are relieved of the necessity of trying to understand the new unit simply as a statistical summation of its parts. Either the person now walks or he does something else, and the elementary actions which make walking possible do not conspire to cause the walking any more than physiological reflexes add themselves together into a psychological response of the "organism-as-a-whole." In each case the difference lies in the fact that the spatial and temporal boundaries of the behavioral unit have been extended; in other words, we are dealing with a different, more comprehensive kind of unit.

The writer was led to a consideration of such units through a phenomenon he has noticed repeatedly in cases of traumatic retrograde amnesia. This phenomenon is that the amnesic period extending backwards from the accident seems to originate at a point just after the individual had started a new goal direction--as if there were a psychological tie-up between the interrupted motivation and the ability to recall. This tie-up cannot be demonstrated in all reported cases but it can be verified from the case accounts often enough to suggest that it is not mere chance. The correspondence between recall and motivation is not perfect because the accident victim will invariably recall the beginning of the new goal direction but nothing thereafter. For example, a young man is out on a day's picnic with a group of friends which is involved in an auto accident. Just prior to the accident the group had left the picnic grounds bound for home and intending to stop at a roller skating rink on the way. After the accident the young man remembers all the events of the day up to the moment when he was backing the automobile out of the parking grounds preparatory to starting for home. Everything for the next five minutes or so is a complete blank, including the events of the accident itself, and despite the fact that he himself was driving the car.

The whole amnesic period seems to be a behavioral "package" in which recall and motivation are tied together, just as in the much discussed Zeigarnik effect. If such be the case it is not enough to analyze recall behavior and motivational behavior as if they were always discrete behavioral acts and thereby ignore more extensive units which determine their existence and nature. This is a false psychological elementarism which fits badly the extensive data of abnormal, social, and other areas.

Three characteristics of such units as the one just described prevent them from being considered elementary. First, they are not made up of a "pure" psychological event such as a perceptual response or a feeling response, but comprise diverse sorts of behaviors. Second, the more elementary acts function as participating members in a larger complex and are bound by it into a more or less unified field or segment. Thirdly, the period of time is too long to permit the unit to be considered as a simple stimulus-response coordination, unless one resorts to the fiction of filling the gap with intervening variables.

Quite a different type of unity is represented by the concepts of "ego" and "role," which have come to such prominence in abnormal and social psychology respectively. In the former, the essential fact is that a personally significant event in one area of life induces related changes in others, as if there were a general factor ("ego," "anxiety," "security need," etc.) which linked all of them together. Thus the failure of a man on a job induces changes in behavior, not only to the job itself and the institution employing him, but as well to politics, religion, sex, his friends, and himself. The cement may well be a witting or unwitting set of assumptions and inferences therefrom which, however peculiarly they may strike another person, are actually a system of logic in the behavioral sense of that term. In short, the ego may be one of several sets of logical action which has been built up during the development of the reactional biography and which now serves as a consistently integrated unit of personality.

The term "role" is in many respects similar to that of ego because the unified behavioral complex for which it stands has again as its chief character the interrelation of a set of assumptions, attitudes, and inferences concerning one's behavior and that of others. Cottrell's definition, quoted by Sarbin (1, p. 225), stresses the internally consistent behavior and the fact that it presents a set of stimuli for similarly consistent behavior in others. The social (i. e. interpersonal) nature of role distinguishes it from ego--that plus the fact that it is more restricted in its scope.

Psychopathology offers an excellent field in which to study higher units of the reactional biography. For example, in the famous Beauchamp case, the lines of dissociation seemed to follow conflicting roles which Miss Beauchamp

had acquired, one of these a rather severe, puritanical role, another a mischievous, irreverent role, and still a third which was "stupid," rejecting, and sullen. In pursuit and escape fugues a strong motivational set dominates recall and other psychological actions, quite analogous to the traumatic amnesia discussed above.

Readers will doubtless notice the similarity of the idea of this paper to the hierarchies and sub-hierarchies of Lewin and his students as well as some of the writings of Gestalt psychologists. For this reason, several theoretical points of difference should be stated and underscored. Any idea of some kind of "whole" which transcends and governs its parts can easily lead to the mystique of philosophical idealism. A genuine field theory handles complex units in quite a different manner. The "whole" is never more than a system of interacting, participant factors which possess a definite spatial and temporal coordinate system. For the study of more extensive units than a simple behavior segment, we require only to extend the boundaries of the space-time field to include whatever a complete description needs. It seems to the writer that the crucial point is to always preserve a definite connection between the psychological unit postulated, and the physical and physiological facts without which it cannot exist. Once these connections are ignored, confused, or broken, as Lewin often did, the way is prepared for another journey into psychophysical dualism.

The developing facts of personality science favor a theory of complex unities. Psychological action is not really a flowing stream which one dares to divide only at the risk of artificial abstractionism, nor is it a series of S-R beads strung together. It is full of functional unities at all levels, of gaps, jumps, repetitions, and transitions; parts of personality are tightly knit together, other parts are loosened to the point of dissociation. As the reactional biography develops, elementary processes are incorporated into larger action fields, and conversely, vague, generalized action patterns are steadily detailed, subdivided, and specified. To carefully delimit and experiment upon the participating factors entering into such action fields, no matter how extensive they may be, is the best way to avoid a psychological elementarism which tries to envisage stimulus-response plus intervening variables as the brickwork of human personality, and at the same time to disavow the reified abstractions of "group," "society," "culture," or "the cosmos" in general, which are often invoked as explanations of personality.

REFERENCES

1. Sarbin, T. R. Role Theory. In Lindzey, Gardner (Ed.), Handbook of social psychology. Cambridge, Mass.: Addison-Wesley, 1954, Vol. 1.

A BOOK REVIEW

Harry C. Mahan

Oceanside-Carlsbad College

Psychology. By Delos D. Wickens and Donald R. Meyer. New York: The Dryden Press, 1955. Pp. vi, 541. \$5.25.

Of the various textbooks written for the first course in general psychology which have appeared during the past several years Wickens and Meyer is the only one with which this reviewer is familiar which has attempted to present its subject matter from a systematic viewpoint. The position of these authors is that of behaviorism, and they differ from most textbook writers in that they do not avoid telling their readers what they mean when they say that "psychology is the study of behavior." They distinguish psychology from biology (as other behaviorists have tended to do during recent years) by stating that psychology is concerned with molar behavior whereas biology is interested in the molecular activities of organisms. They have separated the two by placing their coverage of relevant anatomy and physiology (and a very good coverage it is, too) in the last one hundred pages of the book. Such a differentiation is, in this reviewer's opinion, a highly commendable step forward and, although there may have been others, this is the first instance of it which I have seen since J. R. Kantor's Survey appeared in 1933. It has been my experience that the average beginning student has considerable difficulty in classifying and differentiating the various branches of science, and the average textbook in general psychology only adds to his confusion.

Although many students probably think of schools of psychology as existing in the historical sense only and of few present day psychologists as being identified with them, Wickens and Meyer have demonstrated that they are fully qualified as spokesmen for and advocates of the modern version of behaviorism. They state their position on pp. 22-23 by saying that although "a daydream is a response," "in the final analysis, responses are movements of muscles," and "the behavior we observe is, in the end, the product of our physiological make-up, the result of the actions of our sense organs, our nervous systems, our muscles, and other bodily components." On page 114 they pay their respects to field theory by saying that "only by considering behavior as arising from an interaction (*italics theirs*) between internal conditions and the external environmental situation can we develop an ability to predict and understand behavior." The writer looked in vain, however, for any further expression of this point of view, nor was he able to find any evidence of the authors' familiarity with the literature of interbehavioral psychology in particular.

Following their introductory chapter, Wickens and Meyer devote three chapters to the subject of learning and they also emphasize the principles of learning in their chapters on social behavior and personality. On the other

hand, developmental psychology receives scant attention and of the somewhat less than twenty pages in the chapter on maturation approximately ten are devoted to a discussion of maturation in rats, chicks and salamanders. As interesting and important as the subject of learning may be to the elementary student it seems unfortunate to deprive him of an opportunity to gain at least some superficial acquaintance with the tremendous amount of important work which has been done with human infants and children during the past several decades. Where such resources are available it will of course be possible for the instructor to compensate for this deficiency through outside reading assignments, but in some instances his elementary text will be the only book in psychology with which the student will ever develop any degree of real familiarity.

Among the chapters which impressed this reviewer most favorably were those on emotion and personality. In the former the authors present thirty pages of excellent description and explanation of emotional *reactions* (italics mine) without even mentioning the endocrine glands, the autonomic nervous system, blood pressure or the galvanic skin reflex. All physiological aspects are covered in those chapters devoted exclusively to that subject and are not mixed in with the purely psychological material. The chapter on personality is outstanding for its treatment of the hereditary nature of personality characteristics and the relationship between body type and personality structure. The authors give short shrift to both of these so called theories and they are well oriented as to what are psychological data and what is something else. One criterion of a good systematic psychologist, behaviorist or otherwise, is that he will include nothing between the covers of his textbook which he cannot defend, and the rejection of genes, chromosomes and Professor Sheldon's "types" as essential parts of the science of psychology is in itself no mean achievement. In this respect Wickens and Meyer offer a welcome relief from the discouragingly monotonous regularity with which these topics have been infiltrating themselves into elementary textbooks for as far back as many graduate students are able to remember.

Of all of the topics covered by the average textbook in general psychology that of motivation probably presents the instructor trained in interbehavioral theory with the greatest amount of difficulty. This difficulty arises from the wide acceptance of the principle that the basic causes of human actions are powers or forces within the individual which transcend his actual responses to objects, persons, situations, conditions and events. Formerly these powers were known as instincts, but recently they have gone under such aliases as drives, needs and even motives. Sometimes they are thought to be physiological and sometimes mental; sometimes they are defined as stimuli and sometimes as responses, but always are they responsible for the force and direction of the activity of the individual.

In its reliance upon drives as general explanatory principles of behavior the text under present consideration is no exception. In their clarity of expression and definition of terms, however, Wickens and Meyer would rate well above the average. They have at least presented their concepts in bold relief and, in addition to the notion of "drive states," which they consider responses (desires?), they use the term "drive stimulus," which refers specifically to the stimulation of an interoceptor when such stimulation results in a determined, persistent relief seeking response. In spite of their clarity in defining terms, however, they do exhibit an unexplainable systematic weakness even within the structure of their own system by classifying "curiosity" and "avoidance of repetition" as drives brought about by "biological motives." Wickens and Meyer tell us that although we cannot see the drives we can "infer it from the organism's past history and from its behavior." Interbehavioral psychologists will wonder why it is necessary or even desirable to resort to such an inference at all, particularly when the drive concept seems to add nothing to our understanding of the way in which organisms adapt themselves to their stimulating surroundings. It is perhaps ironical that the behaviorists, who were the first to attack the concept of "mind" on the ground that to infer it from the organism's past history and from its behavior was not sufficient for its acceptance as a scientific concept, now defend the construct of "drives," using the same old mentalistic argument which they themselves demolished many years ago.

In summary it can be said that from the standpoint of clarity of thought, organization and English prose style, Wickens and Meyer would rate, in the opinion of this reviewer, at least, well above the average textbook of its kind. Its appropriateness for the first course in psychology is a matter which only the individual instructor or department can decide, but for psychology majors who have already developed a serious interest in the subject and who wish to be familiar with the latest developments in behavioristic thinking it is certainly required reading. To students of interbehavioral psychology it emphasizes once again that although behaviorism is making considerable progress, particularly in the field of learning and in its concepts of emotion and personality, it is still limited to the study of the gross movements and physiological activities of the individual and, particularly in its consideration of human motivation, it appears to be as far away from the field theory approach to organism-stimulus relationships as ever.

SOME COMMENTS ON THE ANALYSIS OF EMOTIONAL BEHAVIOR

Robert Yates Moore¹

University of Chicago

The problem inherent in attempts at the scientific analysis of emotional behavior has been one of definition. Each person, psychologist or otherwise, has some conception of what is meant by emotion. These conceptions vary, even among psychologists. A clear unambiguous definition of emotion, which adequately delineates the class of behavior involved and upon which both theoretical and empirical psychologists will agree, has not been evolved. That such a definition is forthcoming is doubted by some. Duffy (10) believes that emotion is not a distinguishable category of behavior but only an extreme manifestation of degrees of characteristics seen in other kinds of behavior. This does not seem to be a profitable approach. Emotion is a useful term; it has meaning for people. If an adequately and acceptably defined referent could be found for it the term would increase in usefulness. As a name for a category of behavior it should not be discarded, even though at some points this category seems to grade imperceptibly into others. It is equally difficult in some instances to distinguish between other classes of behavior which have arbitrarily, but usefully, been separated. For example, a fine line of distinction between normal and abnormal behavior is difficult to draw, but this does not detract from the practical value of this distinction. The author, then, thinks that emotion can be salvaged as a definable concept. One method of contributing to the accomplishment of this end would be through the application of general psychological theory to experimental investigations of typical and readily recognizable examples of emotion. Specific information thus derived about emotional behavior could be used to more adequately delineate this category of behavior from others. One such typical and readily recognizable response is the conditioned emotional response (CER). A description of this example of emotional behavior and a summary of some investigations of this response are presented in the following discussion.

Crouching or "freezing" behavior has long been recognized as a response in various sub-human species to strong "emotional" stimuli. The conditioned emotional response (conditioned "anxiety") is a laboratory reproduction of this phenomenon. It was first quantitatively studied by Estes and Skinner (11), who superimposed this response upon a simple operant (lever pressing). The conditioning paradigm is an example of classical Pavlovian conditioning, but it also fits into the anxiety conditioning paradigm of Schoenfeld (24). Repetitive

1. The author wishes to express his gratitude to Prof. H. F. Hunt for his aid in the preparation of this paper and for his permission to comment on the results of experimentation done on the CER in his laboratory.

pairing of a neutral stimulus (sound or light) with a noxious unconditioned stimulus (shock) results in the acquisition by the CS of the power to evoke the unconditioned response. Techniques of conditioning and other procedures can be obtained in detail from the papers of Hunt and Brady (1, 2, 4, 6, 7, 16, 17, 19, 20).

Two methods have been used in this laboratory to observe this response. First, one may observe the response directly in the "grill-box," an oblong chamber with a grill floor and one glass wall to permit ready observation. The CER may also be observed as an effect upon the cumulative lever pressing curve of rats in the Skinner box. In the latter situation during the time interval in which the CS is presented one sees a complete or nearly complete cessation of lever pressing. This is resumed at the cessation of the CS if shock does not follow. In the grill-box a conditioned animal shows a characteristic immobility at the onset of the CS. Ongoing behavior ceases and the rat crouches close to the floor. Signs of diffuse autonomic discharge appear. The animal defecates (a statistically reliable component of the CER, 18), urinates, and shows piloerection. And if the CER is strong he is unresponsive to rather violent external stimulation during the presentation of the CS. Cessation of the CS is again followed by a renewal of previous ongoing behavior.

The advantages of the CER as an experimental model for analysis of emotional behavior have been emphasized by Brady and Hunt (5). The CER is a natural part of the behavior repertoire of various animal species. It is easily and dependably elicited and conditioned. It is remarkably stable over short as well as long periods of time. The techniques of superimposing the CER upon a stable lever pressing habit provide a method for reliably quantifying the response strength. This technique also provides a control for mutilation by techniques which are used to selectively modify the response, since any technique which severely mutilated the organism would almost surely have a detrimental effect on lever pressing.

The following is a summary of some of the results from experimental studies of the CER. Otis (22) found that animals given CER training prior to 19-24 days of age showed no CER at that time, nor when tested at six months of age. Animals given CER training subsequent to 19-24 days showed a CER at both times. The CER is more rapidly conditioned and more slowly extinguished with a strong shock (UCS) than it is with a light shock. With a strong shock the response is also more generalized to the surroundings than it is with a weak shock. More adaptation trials are needed to achieve good discrimination of the response when a strong shock is used. In the Skinner box it is more difficult to condition the CER when continuous or ratio reinforcement schedules are used (13) and similarly, extinction of the response is more rapid with these schedules than with an aperiodic schedule of rein-

forcement (3). But no correlation was found between the rate of acquisition or extinction of the CER and the rate of lever pressing (12).

The CER may be temporarily attenuated by a series of electroconvulsive shock (ECS) treatments (1, 6, 16). Since this effect may be reproduced using carbon disulphide convulsions (20) and does not appear when the ECS is given with the animal under anesthesia, it appears to be a function of the convulsion. Whether the pure muscular part of the convulsion with its concomitant afferent stimulation is necessary will be tested by blocking the convulsion with succinyl choline. The attenuation of the CER is not permanent but returns in about 30 days following the ECS. This can be postponed by further ECS (9). Quantitative parameters of the ECS effect have been studied (12) as well as time factors in administration of it (7). The CER may be extinguished during the period of attenuation so that extinction occurs with the elaboration of a minor abortive form of the response, which can only be picked up in the Skinner box.

Various drugs have been tested to study their effect upon the acquisition and retention of the CER. Jernberg (21) has found that chlorpromazine in heavy doses does not greatly affect the conditioning of the CER, but does appear decisively to block extinction. Hunt (15) suggests that this could be due to an inability of the animal to generalize from a situation in which he is heavily drugged with chlorpromazine to one in which he is not. This may be unlikely, though, in view of the fact that heavily drugged animals in other experiments (amphetamine and banthine) were able to generalize. Amphetamine interferes with CER conditioning only slightly, and with extinction less, even though the animals under this drug were hyperactive and did not show typical crouching and immobility until tested *sans* amphetamine. In a similar experiment H. F. Hunt and the author (unpublished observations) found that a ganglionic blocking agent, methantheline bromide, also interfered somewhat with conditioning and extinction of the CER but did not prevent it. And the interference was like that seen in seriously ill animals. Another unpublished experiment by the author showed that disruption of the pituitary adrenal axis, via adrenalectomy, had no effect upon acquisition or extinction of the CER. For more detailed accounts of these drug experiments the reader is referred to Hunt's paper (15).

Further experiments have investigated the role of the central nervous system in the elaboration of the CER. Following the proposal of Papez (23) that the circuit including hippocampus --- fornix --- septal region --- hypothalamus --- anterior thalamus --- cingulate --- presubiculum --- hippocampus has a primary role in emotional behavior, much work has been done on these areas. Along this line it was noted by Heistad (14) that lesions involving the hippocampus significantly attenuated the CER, whereas lesions in the cingulate and other cortex did not do so. This observation has been substantiated in part in unpublished experiments by Brady and his coworkers,

and by G. Thomas, the author, and H. F. Hunt, but the results are still inconclusive. Also, lesions in the septal region in the albino rat have given highly emotionally reactive rats who showed attenuation of the CER in proportion to the extent of damage of the fornix column (8).

Although one can generalize very little from these pharmacological and physiological experiments, they do tend to show that if one interjects an intraorganismal variable into the experimental interbehavioral field he can often produce an effect upon subsequent behavior of the organism. This type of experimental manipulation is of interest because different drugs and other manipulations give quite different specific results. And this, because of the varying connections of the neurological structures ablated, and so on, allows the experimenter to make some inferences regarding the mechanisms at work in the elaboration of the reaction systems which make up the response.

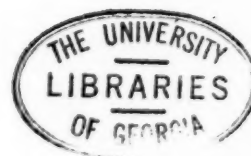
In summary it may be said that while the refined definition of emotion remains a problem confronting the theoretical and empirical psychologists, substantial progress can be made by investigating both some of its properties and factors which influence them. For the interbehaviorist this means application of minute attention to the total behavior segment and its component parts. The author proposes that one method of attacking this problem is through the experimental investigation of easily reproducible, stable, and readily recognizable examples of emotional behavior, such as the conditioned emotional response. The results of some investigations on this response have been presented.

REFERENCES

1. Brady, J. V. The effect of electro-convulsive shock on a conditioned emotional response: The permanence of the effect. J. comp. physiol. Psychol., 1951, 44, 507-511.
2. Brady, J. V. The effect of electro-convulsive shock on a conditioned emotional response: The significance of the interval between the emotional conditioning and the electro-convulsive shock. J. comp. physiol. Psychol., 1952, 45, 9-13.
3. Brady, J. V. Extinction of a conditioned "fear" response as a function of reinforcement schedules for competing behavior. J. Psychol., 1955, 40, 25-34.
4. Brady, J. V., & Hunt, H. F. The effect of electro-convulsive shock on a conditioned emotional response: A control for impaired hearing. J. comp. physiol. Psychol., 1952, 45, 180-182.

5. Brady, J. V., & Hunt, H. F. An experimental approach to the analysis of emotional behavior. J. Psychol., 1955, 40, 313-324.
6. Brady, J. V., & Hunt, H. F. A further demonstration of the effects of electro-convulsive shock on a conditioned emotional response. J. comp. physiol. Psychol., 1951, 44, 204-209.
7. Brady, J. V., Hunt, H. F., & Geller, I. The effect of electroconvulsive shock on a conditioned emotional response as a function of the temporal distribution of the treatments. J. comp. physiol. Psychol., 1954, 47, 454-457.
8. Brady, J. V., & Nauta, W. J. H. Subcortical mechanisms in emotional behavior: Affective changes following septal forebrain lesions in the albino rat. J. comp. physiol. Psychol., 1953, 46, 339-346.
9. Brady, J. V., Stebbins, W. C., & Hunt, H. F. The effect of electro-convulsive shock (ECS) on a conditioned emotional response: The effect of additional ECS convulsions. J. comp. physiol. Psychol., 1953, 46, 368-372.
10. Duffy, E. An explanation of "emotional" phenomena without the use of the concept emotion. J. gen. Psychol., 1941, 25, 283-293.
11. Estes, W. K., & Skinner, B. F. Some quantitative properties of anxiety. J. exp. Psychol., 1941, 29, 390-400.
12. Goy, R. W. The effect of electro-convulsive shock on the conditioned emotional response: The relation between the amount of attenuation and the strength of the conditioned emotional response. Unpublished doctor's dissertation, Univ. Chicago, 1953.
13. Goy, R. W., & Hunt, H. F. The resistance of an instrumental response to supression by conditioned fear. Amer. Psychologist, 1953, 8, 509.
14. Heistad, G. T. Unpublished observations, 1952.
15. Hunt, H. F. Some effects of drugs on classical (type S) conditioning. Trans. N. Y. Acad. Sci., In Press.
16. Hunt, H. F., & Brady, J. V. Some effects of electro-convulsive shock on a conditioned emotional response ("anxiety"). J. comp. physiol. Psychol., 1951, 44, 88-98.

17. Hunt, H. F., Jernberg, P., & Brady, J. V. The effect of electro-convulsive shock (ECS) on a conditioned emotional response: The effect of post-ECS extinction on the reappearance of the response. J. comp. physiol. Psychol., 1952, 45, 589-599.
18. Hunt, H. F., & Otis, L. Conditioned and unconditioned emotional defecation in the rat. J. comp. physiol. Psychol., 1953, 46, 378-382.
19. Hunt, H. F., Jernberg, P., & Lawler, W. G. The effect of electro-convulsive shock on a conditioned emotional response: The effect of electro-convulsive shock under ether anesthesia. J. comp. physiol. Psychol., 1953, 46, 64-68.
20. Hunt, H. F., Jernberg, P., & Otis, L. The effect of carbon disulphide convulsions on a conditioned emotional response. J. comp. physiol. Psychol., 1953, 46, 465-469.
21. Jernberg, P. Unpublished master's thesis, Univ. Chicago, 1956.
22. Otis, L. Unpublished observations, 1955.
23. Papez, J. W. A. A proposed mechanism of emotion. Arch. Neurol. Psychiat., 1937, 38, 725-743.
24. Schoenfeld, W. N. An experimental approach to anxiety, escape, and avoidance behavior. In Hoch, P. H., & Zubin, J. (Eds.), Anxiety. New York: Grune and Stratton, 1950.



NEWS AND NOTES

Readers are invited, in fact, are urged, to contribute comments on articles published in the Psychological Record. Since the next issue is scheduled for January 10, 1957 please submit your comments by December 1st.

NEWS

The multilith masters for this issue of the Psychological Record were typed on an IBM Executive typewriter. With the use of this machine we will be able in the future to publish the Record in regular journal format.

Paul T. Mountjoy has joined the Department of Psychology of Denison University.

Edith D. Neimark is now working as a research psychologist at Lackland Air Force Base.